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THE RELATIONSHIP BETWEEN RESULTANT  
TENDENCY TO SUCCEED AND ABILITY GROUPING

by



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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE  
OF MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "The Relationship Between Resultant Tendency to Succeed and Ability Grouping" submitted by Glenn H. Allen in partial fulfillment of the requirements for the degree of Master of Education.





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## ABSTRACT

This study was designed to investigate the relationship between achievement motivation and school achievement when students are grouped into homogeneous and heterogeneous classes based on academic ability.

The study was based on the theory of achievement motivation developed by Atkinson. Students were administered the TAT n Achievement Scale and the Test Anxiety Questionnaire for Children in order to determine each individual's resultant motive to succeed. Immediately thereafter these students were subject to a measure of their school achievement in terms of the Stanford Achievement Battery (Partial, Form W).

Scores of resultant motive to succeed were compared with scores obtained on the standardized achievement test. The hypothesis tested was that homogeneously grouped students who scored high in resultant motive to succeed and correspondingly scored high in school achievement would constitute a significantly larger group than those of the heterogeneous group who were categorized using the same variables.

The results did not support the hypothesis.



## TABLE OF CONTENTS

CHAPTER		PAGE
I	THESIS PROBLEM . . . . .	1
II	BACKGROUND THEORY AND RESEARCH . . . . .	5
III	DEFINITIONS AND HYPOTHESIS . . . . .	10
	Definitions . . . . .	10
	Sample - Group A and Group B . . . . .	10
	Neutral Condition. . . . .	12
	Achievement Imagery. . . . .	12
	Resultant Tendency to Succeed. . . . .	13
	Hypothesis. . . . .	13
IV	EXPERIMENTAL DESIGN. . . . .	15
	Procedure of the Study. . . . .	15
	The Test Instruments. . . . .	15
	TAT Measure of n Achievement . . . . .	18
	The Test Anxiety Scale for Children. . . . .	21
	The Stanford Achievement Test - Advanced Partial Battery, Form W. . . . .	22
	Elley - Measure for Socio-Economic Classification. . . . .	24
	Test Administration Procedure . . . . .	25
V	ANALYSIS OF DATA, FINDINGS AND CONCLUSIONS . . . . .	27
VI	DISCUSSION, LIMITATIONS AND IMPLICATIONS . . . . .	30
	BIBLIOGRAPHY . . . . .	37
	APPENDICES	



## CHAPTER

## PAGE

Appendix A	Additional Information about the J.A.V. Program. . . . .	41
Appendix B	Calgary School Board - Junior High Testing Program . . . . .	44
Appendix C	Test Anxiety Scale for Children . . . . .	49
Appendix D	S. E. Index . . . . .	55
Appendix E	Raw Scores and Corresponding T Scores on the Test Anxiety Scale for Children . . . .	58
Appendix F	Raw Scores and Corresponding T Scores on the TAT n Achievement Test . . . . .	62
Appendix G	Raw Scores on Subtests of the Stanford Achievement Battery (Partial), Form W . . . . .	66
Appendix H	Raw Scores on the Elley S.E. Index. . . . .	71





## LIST OF TABLES

TABLE		PAGE
I	Comparison of Resultant Tendency to Achieve with Verbal and Numerical Achievement . . . . .	29
II	Means, Standard Deviations, and t-Values for Groups A and B on Five Variables. . . . .	32



## CHAPTER I

### THESIS PROBLEM

In the field of education today there is a genuine concern to provide equal opportunity for all children to develop their potential to the fullest. In the implementation of this philosophy during the first two decades of the twentieth century attempt was made to make education available to all children. It soon became apparent to educators that the stringent academic curricula passed down by earlier generations was of little value to a large percentage of the school population. The response to this dilemma by some educators was to propose broader curricula which included vocational training and other academically less demanding forms of education. Other educators such as James and Dewey suggested new methods of teaching as well as changes in the curricula to accomodate the needs of the masses.

Another approach to resolving the dilemma which is presently being debated among educators involves the grouping of students according to their academic ability. Advocates of ability grouping (Wyndham, Borg, Goodlad, Anderson) argue that a wide variation of ability in students of a class creates frustration for those of lower ability and a lack of challenge for those of superior ability. It is generally assumed, by the proponents of ability grouping that by narrowing the range of ability among students greater incentive to achieve will be created.

This assumption is based on the idea that one's feelings of



success or failure in day-to-day schoolwork are based on an evaluation of one's own performance relative to the performance of others in the class. Opponents of ability grouping tend to minimize the issue of achievement and emphasize instead potentially undesirable social effects from placing focus on an academic hierarchy within the school.

Most of the arguments for ability grouping have face validity. Only experimentation and research can provide evidence of an empirically valid nature.

The impetus for the present study arose out of a similar project which was conducted by Atkinson and O'Connor (1963) who investigated the motivational implications of ability grouping among sixth grade children. These researchers were concerned with variations in academic achievement which occurred within homogeneously grouped classes, and the relationship of this variance to initial differences in a factor which they call "resultant tendency to succeed". This factor considers a person's positive motive to succeed in relation to that person's avoidant tendency to succeed. Atkinson and O'Connor found that with children in whom the motive to achieve success is strong, relative to their motive to avoid failure, improved performance and greater interest in schoolwork were generated in homogeneously grouped classes. Studies by Lowell (1952), McClelland (1953, 1961), Atkinson (1957) and Feather (1966) lend support to the finding that there is a relationship between motive to achieve success and school achievement.





The question that is raised by the Atkinson-O'Connor study is whether a person's motive to achieve success should be considered, in addition to his academic prowess, in the selection of students for homogeneous grouping. The purpose of this study is to further investigate this question using the techniques of the Atkinson-O'Connor study with students attending Junior High School (Grades 7, 8 and 9) in a special program established by the Calgary Public School Board.

In 1963 the Calgary Public School Board sought to provide a Junior High School program for students of low-normal capacity which would enhance the students' scholastic achievement and stimulate a greater interest in education. Students possessing low-normal intelligence have characteristically suffered from frustration and failure when forced to adhere to the demands of the regular Junior High School program. This special program was organized in the hope that these students could achieve greater academic success and greater personal satisfaction.

Placement of students in this program (described in Chapter III) is based on scholastic achievement and on a number of other psychological variables. Once identified these students are then offered a unique program encompassing a modified academic curriculum interspersed with a variety of vocationally oriented subjects (see Appendix A). This program is called the Junior Academic - Vocational Program and will, in this thesis, be referred to as the J.A.V. program.

To create an academically homogeneous atmosphere for this



program students were removed from their regular school program. In order to do this students were sent from their "home" districts to attend one of two special schools. Within these schools only the J.A.V. curriculum was offered.

Admission to the J.A.V. program was voluntary. Some students who met the entrance criteria (see Chapter III) chose to remain in the regular school program. Others whose preference it was to enter the J.A.V. program were excluded due to limited facilities. These students, thus provided the present researcher with a ready control group for this study. Because these two groups were carefully chosen with regard to academic ability and because they experienced contrasting "homogeneous" and "heterogeneous" settings, a suitable situation existed for comparison. This study will be concerned with the effects of these two settings on students who, for their group, appear to be strong in resultant motive to succeed. Specifically, it is the purpose of this study to determine if homogeneously grouped students who scored high in resultant motive to succeed and correspondingly high in school achievement would constitute a significantly larger group than those of the heterogeneous group who were categorized using the same variables.



## CHAPTER II

### BACKGROUND THEORY AND RESEARCH

McClelland and his associates (McClelland, Atkinson, Clark and Lowell, 1953) embarked on an investigation of human motives based on a need for a generally useful and valid method of measuring these motives. The research which they instigated led them to adopt a modified technique (Thematic Apperception Test; TAT) which had been invented by Murray (1936) for eliciting imaginative stories in response to pictures. Murray arrived at a list of some 20 needs, including achievement, which he called "psychogenic" needs.

It was Murray's contention that such needs could be aroused from within by internal visceral processes or from without by the effect on a person of the immediate situation. The latter view led McClelland et. al. to study the effects of experimentally aroused motivational states on thematic apperception.

McClelland and his co-workers launched a program of research on "the need to achieve", which is fully described in The Achievement Motive (McClelland, Atkinson, Clark and Lowell, 1953). The design of the original studies required the creation of experimental arrangements which presumably raised or lowered the intensity of inferred need for achievement immediately before male college students were asked to write imaginative stories in response to 4 pictures. The results of this research led to the conclusion that individual differences in achievement scores represented differences in strength



of a relatively stable and general disposition to achieve that is acquired early in life. The motive to achieve elicited through McClelland's technique is termed "n Achievement".

Later studies by Atkinson (1953), Tolman (1955) and Rotter (1954) searched for a theoretical principle which would explain the relationship of strength of motive to achieve to overt goal directed performance. Atkinson (1957), put forth the hypothesis that the strength of the disposition to achieve, as manifested in performance, can be viewed as a function of not only the motive-disposition of an individual but the expectancy of goal achievement and incentive. This general principle is proposed by Atkinson (1964, p. 242):

"It is assumed that the motive to achieve success ( $M_s$ ) which an individual carries about with him from one situation to another, combines multiplicatively with two specific situational influences, the strength of expectancy or probability of success ( $P_s$ ) and incentive value of success at a particular activity ( $I_s$ ) to produce the tendency to approach success that is overtly expressed in the direction, magnitude, and persistence of achievement oriented performance. In other words the strength of motivation to achieve, or tendency to approach success ( $T_s$ ) through performance of certain actions, may be represented:  $T_s = M_s \times P_s \times I_s$ ."

Atkinson explains that the motive to achieve success ( $M_s$ ) is a characteristic which an individual carries with him from situation to situation, a characteristic which remains relatively stable. The other two variables  $P_s$  and  $I_s$  depend on a person's past experience in specific situations where he has encountered similar circumstances.

Considering Atkinson's postulate  $T_s = M_s \times P_s \times I_s$  and considering that  $M_s$  is a rather stable characteristic then an





individual, finding himself in an achievement-oriented situation will display strength of motive to achieve as a function of that individual's perceived probability of success and incentive value of success at that task.

Essential to the understanding of Atkinson's theory is his conception of  $P_s$  and  $I_s$ . Atkinson assumes that  $I_s = 1 - P_s$ . This is interpreted to mean that when an individual perceives a goal as being relatively easy to obtain, his probability of success is high, thus the reward for obtaining this easy goal becomes small. If the probability of success is small (.1 for example) then accomplishment of this difficult task presents considerable reward or incentive to the individual. The value of this assumption can be considered by regarding the following table:

TASK	$P_s$	$I_s$	$T_s$ WHEN $M_s = 1$
A	.90	.10	.09
B	.70	.30	.21
C	.50	.50	.25
D	.30	.70	.21
E	.10	.90	.09

It can be seen that  $T_s$  is increased as  $P_s$  approaches .50. Therefore a person who approaches a situation with a probability of success of about .50 will display a stronger motive to achieve, than a person with either a very high or very low probability of success.

Atkinson also assumes that in addition to a general



disposition to achieve success, an individual has a disposition to avoid failure (T-F). When the latter disposition is aroused within a person, as it is aroused whenever it is clear that a person's performance will be evaluated and failure is a distinct possibility, the result is anxiety and a tendency to withdraw from the situation. The overall efficiency of an individual's performance of a task is seen by Atkinson to be a resultant of the individual's motive to succeed in relation to an individual's motive to avoid failure. Algebraically the resultant tendency to succeed equals  $T_s + T - F$ . Since  $T - F$  is always a negative quantity, implying avoidance, the resultant tendency to approach success is always weakened by the avoidant tendency associated with anxiety about failure.

Atkinson contends that when a person's resultant tendency to succeed is high, his motivation to succeed is high, and in contrast, when a person's resultant tendency to succeed is low, his motivation to succeed is low. It follows then, that in a heterogeneously grouped class, low ability children, will tend to display a lower strength of motive to succeed because their perceived probability of success is always low. Grouping low ability children together, however, should provide a more competitive situation, more nearly approximating one in which the probability of success is in the intermediate range. To the child who is highly motivated to succeed, the homogeneous setting should more strongly arouse his desire to achieve and thus improve his school achievement. To the child whose resultant motivation to achieve is low, the change in probability toward the intermediate



range should arouse anxiety which would presumably hinder his school achievement.

One factor which must be taken into account in the consideration of a person's need to achieve is the socio-economic background of that individual. McClelland (1953) first raised the issue that early child rearing practices could effect the eventual strength of a person's motive to achieve. Rosen (1956) investigated the relationship between socio-economic status and child rearing practice. Rosen's findings indicated a relationship between socio-economic status, child rearing practice and strength of a motive to achieve. In any experiment involving n Achievement it is therefore desireable to control for this factor.





## CHAPTER III

### DEFINITIONS AND HYPOTHESIS

#### I. Definitions

##### Sample - Group A and Group B

In the present study two groups of students were compared. These two groups will be identified as Group A and Group B. Both groups consisted of Grade 7, 8 and 9 students enrolled in the Calgary Public School system. All students involved in the study had been evaluated in Grade 6 on the basis of the following criteria:

- A. On the Stanford Achievement Battery (Intermediate J) these students rated below the 25th percentile on the battery median (Calgary norms).
- B. On the California Test of Intelligence (Short Form-Elementary) these students rated below the 25th percentile (Calgary norms). In 1966 the Safran Culturally Reduced Intelligence Test replaced the California.
- C. They had spent at least seven years in the elementary school program. (Grades 1 to 6)
- D. They had reached the age of 12 years - 8 months or more prior to September first the year they would enter the J.A.V. program.

Based on this evaluation all students in the present study were recommended by their teachers for the placement in the Junior Academic-Vocational program. Some students who were thus recommended



however, chose to remain in the regular school program. This decision was left entirely to the student and his parents. Others who elected to enter the J.A.V. program were prevented from doing so because of limited school facilities. It is from those who chose to remain and those who qualified but were denied entry that Group B was selected. To select Group A, a random sample was chosen of those students who actually entered the J.A.V. program. Specifically Group A was selected from the student population at Van Horne Secondary Vocational School. This school is one of two schools in Calgary offering the J.A.V. program. Numbers in the group were limited to equal that of Group B.

In order to select Group B, it was necessary to survey original applications made for students to the J.A.V. program by principals of their elementary schools for the years 1965, 1966 and 1967. It was found that 132 students who had been recommended for the J.A.V. program in these years had not enrolled at Van Horne. Because of a variety of factors including families who moved out of the district and school drop outs, only 49 of the original group were located. After testing was begun, this number was further reduced by 5 due to illness. The 44 remaining students consisted of 18 grade 7's, 17 grade 8's, and 9 grade 9's.

During their years in Junior High School students in Group A were subject to competition from students of approximately equal academic ability. In contrast, students in Group B experienced competition from students with a full range of academic ability. Thus conditions were such that a comparison could be made of the effects of



placing students of approximately equal academic ability in two contrasting school settings.

### Neutral Condition

McClelland (1953) developed three techniques for preparing individuals for the administration of the TAT, n Achievement Test. These techniques created unique testing conditions under which the arousal level of the individuals involved could be manipulated.

In this study, one of McClelland's techniques called a "neutral condition" was used. This condition is created by telling the subjects that the test which they are about to receive is being conducted for some useful purpose (e.g. establishing norms). There is absolutely no threat that the results will affect the subject's grade, or that school personnel will have access to their scores. Subjects are, however, requested to put forth a good effort.

Hackhausen (1964), citing studies by McClelland et. al. (1953) and Haber and Alpert (Atkinson, 1958), states that the discriminative powers of the TAT are best under neutral testing conditions. McClelland (1953), Scott (1956) and Anderson (1952) have found that extremely strong arousal of subjects in the administration of the TAT may activate defenses and avoidant tendencies.

### Achievement Imagery

In the interpretation of imaginative material in stories written in the administration of the TAT, McClelland (1953) identified cues which indicated "achievement imagery". This condition denotes any imagery which suggests a competition with a standard. In its



simplest terms this means that someone in a story is trying to do better in relation to some achievement goal such as doing a better job or getting ahead in the world.

### Resultant Tendency to Succeed

The "resultant tendency to succeed" is a theoretical personality factor of an individual which involves his strength of motive to succeed as opposed to his motive to avoid failure. The term was coined by Atkinson (1964) to describe a condition consistent with his theory of achievement motivation (described in Chapter II). Operationally the measurement of a subject's motive to succeed and his motive to avoid failure was accomplished, in the present study, by using the TAT n Achievement test (McClelland, 1953) and the Test Anxiety Scale for Children (Sarason et. al., 1960) respectively.

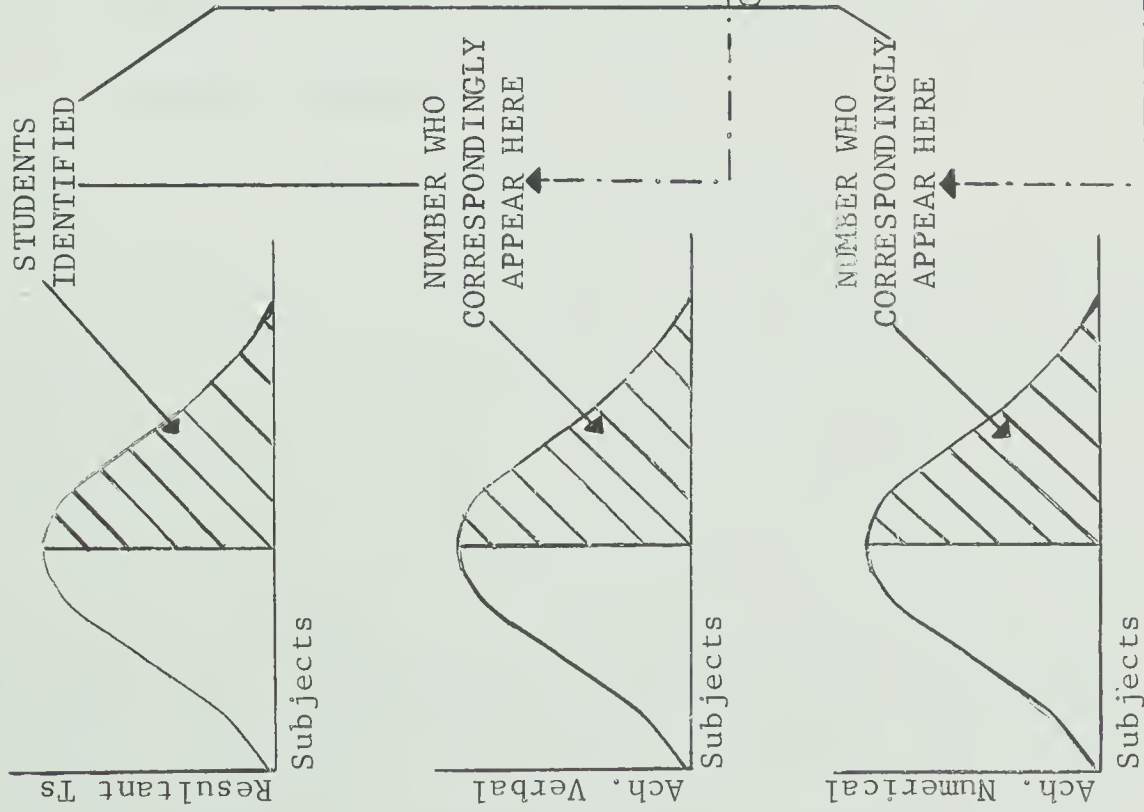
## II. Hypothesis

Students in Group A who score above their class mean in resultant tendency to succeed will correspondingly constitute a significantly higher number of students who score above their mean on verbal and numerical scores on a standardized achievement test as compared to the number of students in Group B who score above their class mean in resultant tendency to succeed and correspondingly score above their class mean on the verbal and numerical parts of the same achievement test. (See diagram)

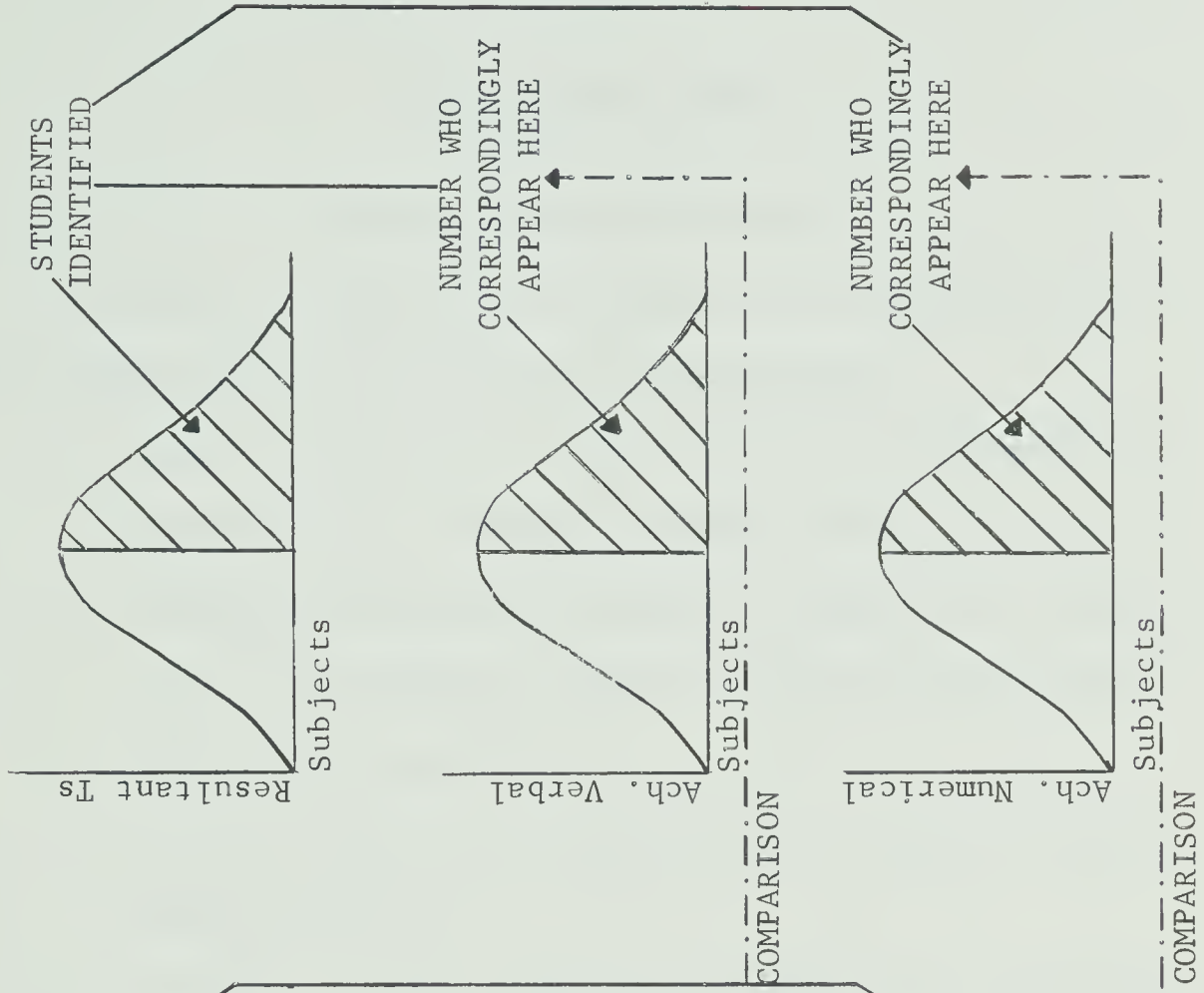




# GROUP A



# GROUP B





## CHAPTER IV

### EXPERIMENTAL DESIGN

#### I. Procedure of the Study

In order to clarify the procedure of the present study a step by step outline of the operation is presented.

1. Sample selection of Group A and Group B (described in Chapter III). Conducted in April, 1968.
2. Treatment procedure (described in Chapter I) - carried out in two different school settings during the years 1965, 1966, and 1967.
3. Testing (described in Chapter IV) - conducted in May and June, 1968.
4. Analysis of data (described in Chapter V) - conducted through July and August, 1968.

#### II. The Test Instruments

For the purposes of this study, it was necessary to reveal which students in Group A and Group B scored above their group mean in resultant tendency to succeed. In order to arrive at a resultant score, it was necessary to accept the assumption made by Atkinson (1964) that the strength of a person's motive to succeed can be directly measured by employing the TAT measure of Achievement and that the Test Anxiety Scale for Children (Sarason et. al., 1960) will measure the strength of a person's avoidant tendency to succeed.



This assumption has been investigated and supported by a number of research projects.

Atkinson and Litwin (1960) employed measures of individual differences in n Achievement and Test Anxiety in a study designed to investigate the effects of these variables on risk preference, level of performance and persistence in achievement oriented activity. The purpose of their study was to investigate how simultaneous classification of persons in terms of their scores on both tests would influence the pattern of the results. Accepting Atkinson's assumption, they were able to show that an insignificant negative correlation exists between n Achievement scores and Test Anxiety scores when both were administered under neutral conditions. Other studies, Mahone (1960), O'Connor (1960) and Feather (1961) tend to confirm the results obtained in the Atkinson-Litwin study.

An earlier study by Raphelson (1957) had reported a significant negative correlation between these two tests but Atkinson (1964) discounts this result, explaining that Raphelson had measured his subjects under achievement oriented conditions in contrast to the latter experiments involving netural conditions. Atkinson feels that some subjects aroused under Raphelson's conditions would be anxious about failure, thus would be inhibited in their expression of n Achievement. Atkinson cites Clark's (1952) experiment concerning the inhibition of manifest sexual responses in imaginative stories when anxiety was aroused as support for his argument.



McClelland (1958) in an experiment involving male college students in risk-taking situations was able to demonstrate that by using the TAT adaptation for measuring n Achievement or by using Sarason's Test Anxiety Questionnaire individually produces diametrically opposite results on all performance variables. McArthur (1953) also found that n Achievement as measured by the TAT did not differentiate between the tendencies to achieve success and avoid failure.

Atkinson and Litwin (1960) found that a significant difference existed between groups who were high in n Achievement and low in test anxiety as compared with other groups who were involved in a ring-toss experiment. This group demonstrated a significant desire to choose positions in front of a ring-toss board which created intermediate risk. Isaacson (1964) established that the same model of preference in the choice of difficulty, can be found outside the laboratory situation, namely, in the choice of college courses. Male college students who were high in n Achievement and low in test anxiety preferred courses of intermediate difficulty. Other studies by Raynor and Smith (Heckhausen, 1967), Broady (1963) and Feather (1961) confirm the earlier findings of Atkinson and demonstrate support for his model of achievement motivation.

In summary it would appear that there is considerable support for Atkinson's thesis that a significant relationship exists between ones motivation to achieve and achievement itself. Furthermore, it appears that people who are highly motivated to achieve will choose risk taking situations of moderate degree. The present study is based on





the assumption that the former conclusions are, indeed, valid.

Caution was taken in the present study to avoid the achievement oriented condition which existed in the Raphelson (1957) experiment.

#### TAT Measure of n Achievement

McClelland (1953) in his experiments in motivation used an adaptation of Murray's (1938) classical studies using the Thematic Apperception Test. In the present study McClelland's technique was used exactly as he has described in The Achievement Motive (1953). Tests were administered under neutral conditions (see Chapter III). Four pictures are used in this technique: TAT 7 BM, father and son picture; TAT 8BM, boy and operation scene; and 2 others developed by McClelland, a boy sitting in a classroom and two men working on a piece of machinery (see Appendix B). Each picture was projected on a screen for 20 seconds. Following this, subjects were encouraged to write a story about that picture using, as a guide, a set of four questions printed at the top of each page (one page was provided for each picture). The experimenter kept time and after each minute announced that subjects should move on to the next question. When the subjects had been writing for 30 seconds on the last question, the experimenter would say, "Try to finish up in 30 seconds". At the end of the final minute the experimenter would begin preparing for the next picture, allowing no more than 15 seconds for subjects to finish their stories. The lights were then dimmed and the next picture was projected on the screen. This procedure went on without interruption until all four stories were completed.



The scoring key for this test was developed originally by McClelland, Atkinson, Clark and Lowell (1953). In the case of this study, use was made of a self-study course of McClelland's marking system developed by Atkinson (1958). Using this technique, Atkinson reports scorer reliability above .80 with undergraduates as scorers after completing only one set of example exercises. With experience, scorer reliability up to .95 is noted by Atkinson. In the case of the present study, using Atkinson's formula (1958) for obtaining a percentage agreement between expert and novice scorers, an agreement above .75 was obtained on all practice exercises. The original checks on score-rescore reliability (McClelland, 1953) indicated a product-moment correlation of .95 between n Achievement scores obtained from the four story records of 30 subjects by two judges working independently on two different occasions a month apart.

The reliability of the test itself has come under some criticism due to low correlation between equivalent forms of this test. Lowell (1950), using 40 male college students under neutral conditions with an interim of one week between measures, found a product-moment correlation of only .22, which is not statistically significant. However, the two forms agreed to the extent of 72.5 percent ( $\chi^2 = 7.82$ ;  $p < .01$ ) in placing subjects above or below the median score obtained from the two distributions combined. (For the purpose of the present study only the latter statistical operation was necessary.)

The validity of the n Achievement measure has been studied



under varying conditions. Lowell (1960), basing a study on the hypothesis that people with high n Achievement scores would show evidence of better learning and performance, tested a group of male college students using a three-picture form of the TAT n Achievement Test followed by administration of a 20-minute scrambled word test. McClelland summarizes the results: (1955) "There is a definite and statistically significant evidence for superior learning in the high as compared to the low n Achievement group."

Validation studies using the French "Test of Insight" (FTI) developed by Elizabeth French (1955) in comparison with the TAT n Achievement Test, confirm a good agreement between the two measures (Atkinson and Litwin, 1960; French and Thomas, 1958). The Atkinson-Litwin study also found that an insignificant correlation existed between the two previously mentioned tests and the "need Achievement" scale of the Edwards Personal Preference Scale (EPPS). Similar results were found by Bendig (1957). McClelland (1958) suggests that the reason for the lack of correlation between the two kinds of measures may lie in the failure of the self-descriptive measure (e.g. EPPS) to reflect differences in motivation and only motivation. If one assumes that the fantasy or projective measure of motivation is "purer" then, as McClelland suggests, "the lack of correlation could be explained if it can be shown that the choice of our self-descriptive measures are influenced by extraneous factors. And they obviously are. By definition they involve choice and choice can easily be influenced by sets and intentions". (McClelland, 1958)



### The Test Anxiety Scale for Children

The Test Anxiety Scale for Children (TASC) was developed by Sarason et. al. (1960) in order to study anxiety in school-age children. These same researchers had conducted intensive studies prior to this at Yale University using the Test Anxiety Questionnaire (TAQ) with college students. The TASC is an adaptation of the TAQ. Although the initial form of the TASC was made up of 43 items, a shortened form, later developed by Sarason, was used in this study. Two modifications in the test were felt necessary in the present study.

In Sarason's original questionnaire, the words "boys" and "girls" and "children" were used. As students in this study ranged in age from 13 to 17 years of age, it was felt that the word "student(s)" should be substituted for the latter words. An example of this change would be:

"When a teacher is teaching you about arithmetic, do you feel that other children in the class understand her better than you?"

In this case the word "children" was changed to "students".

In addition, one item (#17) was taken out of the test because of wording which might have alienated students in completing the remainder of the tests. This item read:

"If you did very poorly when the teacher called upon you, would you probably feel like crying even though you would try not to cry?"

The scale was group-administered. Each item was read to the subjects who were instructed to encircle "yes" or "no" on the answer sheet provided. The students were told that the results would not





affect their grades, nor would school personnel, other than the tester, be able to see the results. Scoring was accomplished by adding the number of "yes" responses.

Sarason et. al. (1958) report test-retest reliability at the Grade 5 level of .82 and a split-half reliability coefficient of .88 at the same level.

Although a slightly shorter, abridged version of the TASC was used in the present study it is assumed that the test would produce similar levels of reliability and validity to that of the original scale. This assumption has not been supported with empirical data. (A copy of the shortened and abridged TASC can be found in Appendix C.)  
The Stanford Achievement Test - Advanced Partial Battery, Form W

In order to assess the academic achievement in verbal and numerical skills of all students in the study, the Stanford Achievement Test - Advanced Partial Battery, Form W (1964) was used. This battery was chosen for a number of reasons. For many years the Calgary Public School Board has used the Stanford Achievement Battery - Advanced, Form J (1953) as a standardized measure of achievement throughout junior high schools in the system. The present edition of the Stanford provides a more up-to-date form of the older instrument as well as providing conversion tables allowing a comparison of scores between the old test and the new. Such a comparison allows a continuation of assessment during the junior high years.

The second reason for using this battery was that in consultation with Calgary School Board specialists in language and



mathematics, it was found that the content of Form W agrees very closely with material being covered in Calgary schools both in the Regular Junior High program and the J.A.V. program. (see Appendix A).

Finally, the reviews given by Bryan (Buros, 1965) and Stake and Hastings (1964) were most favourable to the content of both the language and mathematical parts of the Stanford Battery.

The reliability data for the Advanced Battery are given by the test makers using odd-even split half reliability coefficients and Kuder-Richardson reliability coefficients. Results are reported on each part of the test and for each grade respectively. In the table below, ranges of reliability coefficients are given for each grade and each method.

	Split Half r	Kuder-Richardson r
Grade 7	.77 - .94	.76 - .93
Grade 8	.81 - .94	.80 - .93
Grade 9	.79 - .94	.78 - .93

Median scores for Grades 7, 8 and 9 respectively are .87, .90, and .92 on the Split Half r and .87, .90, and .91 on the Kuder-Richardson r.

The authors of the Stanford Achievement Battery explain that they sought to insure content validity by examining appropriate courses of study and textbooks as a basis for determining skills, knowledges and understandings to be measured.



Elley - Measure for Socio-Economic Classification

Rosen (1956) investigated the effect of position in social strata upon achievement motive. Results indicated that social strata differ from one another in the degree to which the achievement motive is characteristic of their members. Furthermore, the data indicated that members of the middle class tend to have considerably higher need achievement scores than individuals in the lower social strata. In order to eliminate the possibility that socio-economic factors would affect the result a measurement of this factor was taken from all students using the Elley Measure for Socio-Economic Classification.

The Elley questionnaire consists of 20 items (see Appendix D) to which a subject responds "yes" or "no". The questions concern the possession of certain material items in the subject's home and the participation of their family in activities outside the home. Scoring was accomplished by counting the number of "yes" responses.

Elley (1960) reports a reliability coefficient of .77 calculated by the split-half method and corrected by the Spearman-Brown formula ( $N = 432$ ).

Using the construct validity approach of Cronbach and Meehl (1957), Elley predicted a high correlation with the occupational scale, medium correlations with verbal and culturally loaded tests and low but positive correlations with non-verbal tests. All hypotheses were confirmed. (A copy of this measure is available in Appendix D.)



### III. Test Administration Procedure

Students in Group B were dispersed in some 12 different junior high schools in the city. The number in each school varied from two to eight. To initiate the program, the principal in each school was contacted and permission gained to proceed with the program. Following this, parents of the children were informed that their child would be asked to take part in a testing program which would allow a comparison of achievement between schools in the city. Parents were told that they could withdraw their child if they so desired - none did.

At the initial session with the students, they were informed that they were taking part in an experiment which would help to assess in which schools students were progressing more favourably. Candidates were also told that the students with whom they would be compared had received similar marks to their own in Grade 6. Finally it was explained that these tests would not affect their report card grades or their promotion at the end of the year.

Students in Group B were tested within their own schools. Students from grade 7, 8 and 9 were tested simultaneously.

In Group A, the Stanford Achievement Battery was administered to the entire group in four sittings. However, in the administration of the n Achievement, Test Anxiety and Socio-Economic scales, groups were no larger than eight in number.

With both groups of students, the testing program was broken into five parts. These were:





1. The Stanford Battery - Paragraph Meaning - 30 minutes  
- Spelling - 15 minutes
2. Stanford Battery - Language  
Part A - Usage - 10 minutes  
Part B - Punctuation - 7 minutes  
Part C - Capitalization - 7 minutes  
Part D - Dictionary Skills - 15 minutes  
Part E - Sentence Sense - 7 minutes
3. Stanford Battery - Arithmetic Computation - 32 minutes
4. Stanford Battery - Arithmetic Concepts - 25 minutes  
- Arithmetic Applications - 30 minutes
5. n Achievement Test - 16 minutes  
Test Anxiety Scale - 10 minutes  
Elley S.E. Index - 5 minutes

In the case of the Stanford Battery, all testing times were consistent with the test maker's specifications.

In both groups at least one day was allowed between each sitting. All testing took place during the months of May and June, 1968.



## CHAPTER V

### ANALYSIS OF DATA AND FINDINGS

To investigate the assumption of the hypothesis, it was initially necessary to assign students in Groups A and B into sub-groups based on grade level. Group A students became designated as sub-group A-7, A-8 and A-9. Group B students became designated as sub-group B-7, B-8 and B-9.

Beginning the analysis of data, it was first necessary to determine which students, in each sub-group, scored above their sub-group mean in resultant tendency to succeed. To arrive at a single index of this factor, it was necessary to compare each subject's strength of motive to achieve (n Achievement) with his relative strength of motive to avoid failure (Test Anxiety). Raw scores were converted to T scores (see Appendices F and G). T scores were based on the distribution of scores for subjects in each sub-group. An index of resultant motivation to succeed was computed by subtracting the T score for Test Anxiety from the T score for n Achievement. To then determine which students fell above their group mean simply meant a comparison of individual resultant scores with their group mean in this factor. The purpose of this procedure is based on the assumption that students who score above their group mean should reflect this tendency in superior achievement, relative to the rest of their group. These students are referred to as being "high" in resultant tendency to succeed.



Having identified which subjects were "high" in each group, the next step was to determine how many in each group correspondingly placed above their group mean on verbal and numerical parts of the Stanford Achievement Tests. The Stanford Battery consists of three language sections; Language, Paragraph Meaning and Spelling. Scores on these variables were grouped together to give a single language or verbal measure. Correspondingly the three arithmetic parts, Computation, Concepts and Applications were combined, to give a single arithmetic or numerical score. Bryan (Buros, 1965) in his review of the content of the 1964 Stanford Battery indicates that these sub-tests can be combined to provide a single arithmetic and language index. A mean verbal and numerical score was determined for each group.

To determine those students who scored "high" in resultant motivation to achieve and correspondingly above their group mean in standardized achievement, it then became a matter of surveying the results of the previous steps. Having determined the number in each group who met the above criteria, it was finally necessary to determine if a significant difference existed. Calculation of Chi-square using a level of significance of .05 ( $\chi^2 = 3.84$ ) were calculated comparing Group A-7 and B-7; Group A-8 with B-8; and Group A-9 with B-9. The results are indicated in Table I. The results from the analysis of the data would indicate that the hypothesis of this experiment has not been supported.



TABLE I  
COMPARISON OF RESULTANT TENDENCY TO ACHIEVE WITH VERBAL AND NUMERICAL ACHIEVEMENT

Group	Achievement Factor	"High" Resultant Achievement Scores	Corresponding "High" Achievement Scores	$\chi^2$	Sig. (.05)
A-7	Verbal	8	4	.4856	N.S.
B-7	Verbal	9	6		
A-7	Numerical	8	3	2.0817	N.S.
B-7	Numerical	9	7		
A-8	Verbal	7	4	1.1236	N.S.
B-8	Verbal	6	5		
A-8	Numerical	7	3	0.1178	N.S.
B-8	Numerical	6	2		
A-9	Verbal	4	3	0	N.S.
B-9	Verbal	4	3		
A-9	Numerical	4	3	0	N.S.
B-9	Numerical	4	3		





## CHAPTER VI

### DISCUSSION, LIMITATIONS AND IMPLICATIONS

The present study was concerned with the implications of the theory of achievement motivation as put forth by Atkinson (1957). Specifically it was hypothesized that students who were correspondingly high in resultant tendency to succeed and experiencing a homogeneous school setting would find their incentive for success and probability of success in the intermediate range. Consistent with Atkinson's theory, therefore, these students should manifest this challenge to their achievement motive by constituting a larger percentage of high achievers, as classified by standardized school achievement, than those students classified similarly but experiencing a heterogeneous school setting. The present study did not bear out the results found in an earlier study by Atkinson and O'Connor (1963).

The reasons that the present study is not consistent with the earlier study may be linked to several factors. The first is that, as explained in Appendix A, the J.A.V. program is not an exact copy of the school program offered in the regular junior high school. The exact bearing this might have upon the results is unknown. Secondly initial variability between Group A and Group B may have had some effect upon the results of the study. A t test of difference between means for two independent samples, using ungrouped data, was calculated on n Achievement, Test Anxiety, socio-economic level, verbal achievement and numerical achievement to investigate this possibility. The results



of these calculations appear on Table II.

Results of this analysis indicate that no significant difference exists between Group A and Group B on Achievement and socio-economic factors. Indications are, however, that students in Group B were significantly higher than students in Group A on Test Anxiety, verbal achievement and numerical achievement. Because the actual achievement scores of the two groups were not directly compared the latter difference would not affect the results of the study.

The higher anxiety found in Group B may be attributed to a number of factors. It is conceivable that the parents of students in Group B were much more demanding of their children than the corresponding parents of Group A students. Possibly the former parents, having overruled the decision of the school, would become increasingly determined that their children would succeed. Although creating some anxiety it is also possible that were such pressure applied Group B students would work harder, thus producing higher achievement. It is also likely that the competitive school situation in which Group B students were kept contributed to the anxiety of these children.

There are some limitations to the present study imposed by the use of TASC, the choice of the present sample and the analysis of data. Firstly there are no empirical data available supporting the use of the Text Anxiety Scale for Children beyond the Grade 6 level. Minor changes in wording, outlined in Chapter IV should only serve to enhance the results with older children but more research certainly needs to be done to verify the use of this scale with older children.



TABLE II  
MEANS, STANDARD DEVIATIONS, AND t-VALUES FOR GROUPS A AND B ON FIVE VARIABLES

Group	Variable	$\bar{X}$	S.D.	$t^*$	Sig. (.05)
A	n Achievement	3.1509	2.7382	0.2792	N.S.
B	n Achievement	3.3181	2.8186		
A	Test Anxiety	12.6136	5.3903	2.7015	Sig.
B	Test Anxiety	15.7045	5.2293		
A	Socio-Economic	10.5000	3.4739	0.3468	N.S.
B	Socio-Economic	10.7700	3.7287		
A	Verbal Achievement	123.7500	22.0640	1.9992	Sig.
B	Verbal Achievement	133.5681	23.4984		
A	Numerical Achievement	32.9545	8.1212	5.6519	Sig.
B	Numerical Achievement	44.6818	10.9332		

\* Level of significance for a two-tailed test.



The second limitation to the present study involves the use of a mixed sample when using the TAT Test of n Achievement. Most studies which have used this test have consistently selected a sample involving only one sex. Veroff, Wilcox and Atkinson (1953) found that women score higher on n Achievement under neutral conditions than do men. Field (1951) found that n Achievement scores for women do not vary as testing conditions become more achievement oriented.

In the present study a mixed sample was used. Although criticism of the procedure is no doubt valid one factor existed which made the use of a mixed sample more desirable. Sub-groups A-9 and B-9 consisted of only seven subjects each. Dividing these sub-groups into two parts by separating sexes would have created groups too small to consider for statistical purposes. Other sub-groups, although slightly larger, would have presented similar difficulty.

Two factors might be considered when rationalizing the position of using a mixed sample. The first was that the n Achievement scores were not used alone. To arrive at a measure of resultant tendency to succeed it may be remembered that the n Achievement score is combined with a test anxiety score. There is no evidence to suggest that the Test Anxiety Scale for Children is less valid for one sex than the other. It is thus possible that the manipulation of these scores into a single score might partially overcome the unreliability in the n Achievement measure. There are no empirical data to support this position.

The second rationalization offered for the use of a mixed





sample was that in the Atkinson-O'Connor study (1964) after which the present study was designed, a mixed sample of Grade 6 students was used. These researchers offered no justification or explanation of their position.

There may also be some limitations to the validity of the method used in determining which students in each group were high in resultant tendency to succeed. Because the sample was small, it was necessary to use all students who placed above their group mean in this factor. To better insure that these students were indeed those subjects who were most highly motivated to achieve, it would have been statistically advantageous to move some distance away from the group mean. This procedure, had it been possible, may have added credibility to the present results.

Some interesting factors were uncovered in the present investigation which may have some implications for educational practice and further research. In attempting to locate the subjects for Group B it was found that a large number of these students were no longer in Calgary schools. Only 37 percent of the 132 students sought were located in school. It is possible to account for some of the missing students through family mobility, but it was also clearly apparent that a large number had dropped out of school. The exact number which can be attributed to either cause is unknown.

Indications from the J.A.V. program are that for the same period of time approximately 80 percent of the students remained in the Calgary school system. Assuming that family mobility in the J.A.V.



group would be similar to that of the regular program group it becomes clear that the former program is having a very positive effect upon the school drop-out rate.

In relation to the 44 students used in Group B, it is not unreasonable to assume that this group may be atypical in relation to the original group of 132. Those students who dropped out of school may represent a group whose achievement was poor and whose attitude toward education was negative. Should random sampling have been possible of the entire group of 132, it is possible that the standard of achievement in Group B would have been lower. It can be speculated that this factor partially accounted for the results obtained in the present study.

In the administration of the Stanford Achievement Tests another factor was observed which may have implication for further research. The majority of subjects in both Group A and B were noted to have finished each section of the tests some minutes prior to the established time limits. The Stanford Tests are designed with multiple choice responses, thus it is possible for a student to guess or even respond at random to each question. It is conceivable that students of low ability, such as were used in the present study, would be more likely to guess or select answers randomly than those students whose verbal or numerical skills were stronger. If this speculation were to be proven true than one can assume that results of this kind of testing depend upon luck rather than skills. Implications for further research arising from this observation extends into methods of



achievement testing and methods of subject response to these tests.

Further research into the topic of achievement motivation in relation to grouping procedures may develop in a number of directions. The findings of the Atkinson-O'Connor study (1961) which obtained results indicating a relationship between ability grouping and resultant tendency to succeed used a sample containing a wide range of scholastic aptitude. Future research might determine whether Atkinson's theory of achievement motivation is more applicable to some ability groups than others. It may also be fruitful to investigate other reasons why students of similar ability in identical educational settings respond with great variation in their academic work. Finally it would be of value to empirically validate the use of the shortened and abridged version of the TASC, used in this study, with children of junior high school age.



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## APPENDICES





## APPENDIX A



## ADDITIONAL INFORMATION ABOUT THE J.A.V. PROGRAM

### 1. Academic Subjects

The J.A.V. program offers the same academic subjects that are given in the regular junior high school program. Language, literature, social studies, mathematics and science constitute the major academic subjects. The books used in the J.A.V. program are consistent with the regular program but the amount of content that is covered in former program is lower than that of the latter. The curriculum for the J.A.V. program has selected the essential content out of each course so that more time can be spent on basic concepts. J.A.V. students are timetabled to receive equal school time for these academic subjects as they would get in the regular program.

### 2. Vocational Subjects

In grade 7 of the J.A.V. program, the children spend about 30 percent of their time on vocational subjects. In grade 7, students explore a variety of vocational subjects, visiting 6 different shops for a period of 6 weeks each. For boys, shops include: service station operation, small engine repairs, woodwork, metalwork, commercial cooking and horticulture. For the girls, shops include: hairdressing, business education, business merchandizing, crafts, home and child care and sewing.

In grade 8, students spend 35 percent of their time on vocational subjects. At this stage, they are allowed to select 4 of



their original 6 subjects. This allows each student to spend about 9 weeks in each shop. In addition, boys may elect to take business merchandizing or business education if they so desire.

In grade 9, each student selects 2 vocational subjects, spending half of his school term in each shop. Vocational subjects at this stage occupy about 40 percent of the students' time.

### 3. High School Opportunity

After attending the J.A.V. program for 3 years students are selected to go to high school by teacher committees who consider the school achievement of each student. The grade 10 program consists of English 10, Social Studies 10, vocational or business mathematics and science, Physical Education and 10 credits earned in one or two business or technical options.

In 1966 and 1967 approximately 75 percent of grade 9 students were passed on to high school. Follow-up studies by the Calgary School Board indicate that former J.A.V. students generally progress well through high school. Furthermore, it has been found that drop out figures for the J.A.V. group compare favourably with those of other high school programs. Students who are not passed on to high school are permitted to repeat their grade 9 year.



## APPENDIX B





## CALGARY SCHOOL BOARD - JUNIOR HIGH TESTING PROGRAM

Name \_\_\_\_\_ Number \_\_\_\_\_  
                    (last)                    (first)

Address \_\_\_\_\_ Telephone \_\_\_\_\_

Age \_\_\_\_\_ Date of Birth \_\_\_\_\_  
  (day)                    (month)                    (year)

Grade \_\_\_\_\_ School \_\_\_\_\_

Test #1

This is a test of your creative imagination. Four pictures will be projected on the screen before you. You will have 20 seconds to look at each picture then about 4 minutes to make up a story about it. Notice that there is one page for each picture. On each page there appears an identical set of questions. These questions will guide your thinking and enable you to cover all the elements of a plot in the time allotted. Plan to spend about a minute on each question. I will keep time and tell you when it is time to go on to the next question for each story. You will have a little time to finish your story before the next picture is shown.

Obviously there are no right or wrong answers, so you may feel free to make up any kind of a story about the pictures that you choose. Try to make them vivid and dramatic, for this is a test of creative imagination. Do not merely describe the picture you see. Tell a story about it. Work as fast as you can in order to finish in time. Make them interesting. Are there any questions? If you need more space for any question, use the reverse side.



Test #1 - Story #1 (2,3,4)

1. What is happening? Who are the persons?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

Question #1 -

Question #2 -

Question #3 -

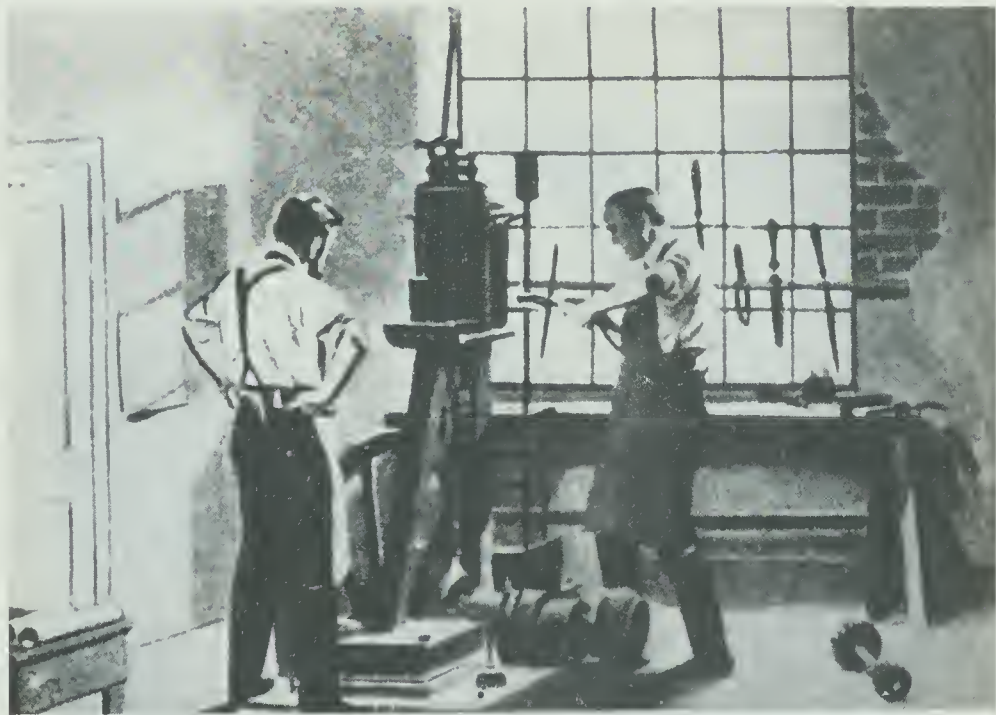
Question #4 -



Boy in a Classroom (McClelland, 1953, p. 99)



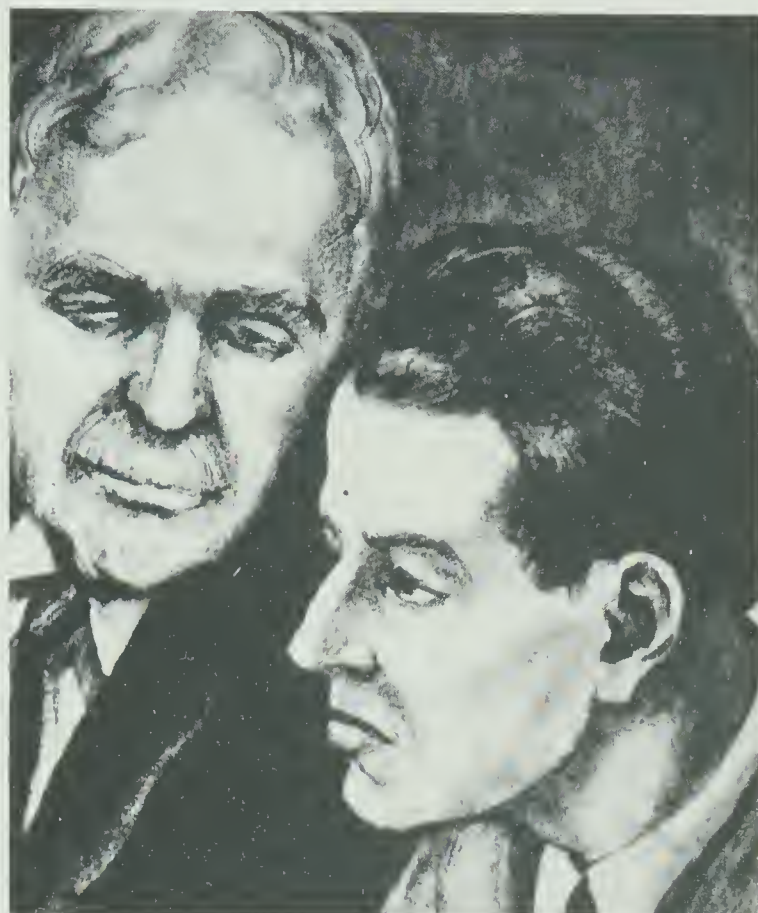
Two Men Working on a Machine (McClelland 1953, p. 99)







TAT 7 BM



TAT 8 BM







## APPENDIX C



## TEST ANXIETY SCALE FOR CHILDREN

## Instructions

I am going to ask you some questions about how you think and feel about things that happen in school. First I will hand out answer sheets and I would like you to fill in the information requested at the top of the sheet.

(Pause)

As I said before, I am going to ask you some questions. No one but myself will see your answers to the questions. These questions are different from most that you are asked in school in that they have no right or wrong answers. You are to listen to each question as I read it aloud, then indicate your answer by circling "yes" or "no" on your answer sheet.

People think and feel differently. The person sitting next to you might put a circle around the word "yes" and you may put a circle around the word "no" in answering the same question. For example, if I asked you this question: "Do you like to play ball?" some would answer "yes" and others "no".

These questions are about how you think and feel about school, and about a lot of other things. Remember, listen carefully to each question and answer it "yes" or "no" by deciding how you think and feel. If you don't understand a question, ask me about it.

I will read each question aloud, then I will give you a few



minutes to think about your answer. When you have decided on your answer, please indicate your choice in the manner that I have explained.



## TEST ANXIETY SCALE FOR CHILDREN

1. Do you worry when the teacher says that she is going to ask you questions to find out how much you know?
2. Do you worry about being promoted, that is, passing from the \_\_\_\_\_ to the \_\_\_\_\_ grade at the end of the year?
3. When the teacher asks you to get up in front of the class and read aloud, are you afraid that you are going to make some bad mistakes?
4. When the teacher says that she is going to call upon some students in the class to do math problems, do you hope that she will call upon someone else and not on you?
5. Do you sometimes dream at night that you are in school and cannot answer the teacher's questions?
6. When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster?
7. When the teacher is teaching you about math, do you feel that other students in the class understand her better than you?
8. When you are in bed at night, do you sometimes worry about how you are going to do in class the next day?
9. When the teacher asks you to write on the blackboard in front of the class, does the hand you write with sometimes shake a little?
10. When the teacher is teaching you about reading, do you feel that other students in class understand her better than you?
11. Do you think you worry more about school than other students?
12. When you are at home and you are thinking about your math lesson for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you?
13. If you are sick and miss school, do you worry that you will do more poorly in your schoolwork than other students when you return to school?
14. Do you sometimes dream at night that other students in your class can do things you cannot do?





15. When you are home and you are thinking about your reading lesson for the next day, do you worry that you will do poorly on the lesson?
16. When the teacher says that she is going to find out how much you have learned, do you get a funny feeling in your stomach?
17. Do you sometimes dream at night that the teacher is angry because you do not know your lessons?

In the following questions the word "test" is used. What I mean by "test" is any time the teacher asks you to do something to find out how much you know or how much you have learned. It could be by your writing on paper, or by your speaking aloud, or by your writing on the blackboard. Do you understand what I mean by "test" - It is any time the teacher asks you to do something to find out how much you know.

18. Are you afraid of school tests?
19. Do you worry a lot before you take a test?
20. Do you worry a lot while you are taking a test?
21. After you have taken a test do you worry about how well you did on the test?
22. Do you sometimes dream at night that you did poorly on a test you had in school that day?
23. When you are taking a test, does the hand you write with shake a little?
24. When the teacher says that she is going to give the class a test, do you become afraid that you will do poorly?
25. When you are taking a hard test, do you forget some things you knew very well before you started taking the test?
26. Do you wish a lot of times that you didn't worry so much about tests?
27. When the teacher says that she is going to give the class a test, do you get a nervous or funny feeling?
28. While you are taking a test do you usually think you are doing poorly?



29. While you are on your way to school, do you sometimes worry that the teacher may give the class a test?



## APPENDIX D



S. E. Index

1. Sex\_\_\_\_\_ Male\_\_\_\_\_ Female\_\_\_\_\_
2. Father's Occupation: \_\_\_\_\_  
(Be clear. For example: Sales clerk at Eaton's,  
door-to-door salesman for Fuller-Brush, travelling  
salesman for Massey-Ferguson)
3. Mother's Occupation: \_\_\_\_\_
4. Do you ever use a language other than English in your home? \_\_\_\_\_  
  
If you do,  
(a) Name it here: \_\_\_\_\_  
(b) Circle the words which tell how often you use it:  
  
Hardly Ever                      Quite Often                      Most of the time
5. About how long have you lived in Canada? \_\_\_\_\_
- 
- 

DIRECTIONS: In the following questions, mark your answer by putting a circle in the right place. For example, in the question "Does your family have a car?" draw a circle around the "Yes" if your family does have a car, and around the "No" if it does not. Be sure to answer all the questions.

- |   |     |    |
|---|-----|----|
| 1. Does your family own a car? _____                | Yes | No |
| 2. Does your family have a garage or carport? _____ | Yes | No |
| 3. Did your father go to high school? _____         | Yes | No |
| 4. Did your mother go to high school? _____         | Yes | No |
| 5. Did your father go to university? _____          | Yes | No |
| 6. Did your mother go to university? _____          | Yes | No |
| 7. Is there a writing desk in your home? _____      | Yes | No |
| 8. Does your family have a stereo? _____            | Yes | No |
| 9. Does your family have a piano? _____             | Yes | No |





10. Does your family get a daily newspaper? \_\_\_\_\_ Yes No
11. Do you have your own room at home? \_\_\_\_\_ Yes No
12. Does your family own its home? \_\_\_\_\_ Yes No
13. Is there an encyclopedia in your home? \_\_\_\_\_ Yes No
14. Does your family have more than 100 hardcover books? (4 shelves 3 feet long) \_\_\_\_\_ Yes No
15. Did your parents borrow any books from the library in the last year? \_\_\_\_\_ Yes No
16. Does your family leave town each year for a holiday? \_\_\_\_\_ Yes No
17. Do you belong to any club where you have to pay fees? \_\_\_\_\_ Yes No
18. Does your mother belong to any clubs or organizations such as study, church, art or social clubs? \_\_\_\_\_ Yes No
19. Does your father belong to any such clubs or organizations? \_\_\_\_\_ Yes No
20. Have you ever had lessons in music, dancing, art, swimming, etc. outside of school? \_\_\_\_\_ Yes No



## APPENDIX E



RAW SCORES AND CORRESPONDING T SCORES ON THE  
TEST ANXIETY SCALE FOR CHILDREN

Subject	Grade	Group	Raw Score	T Score
1	7	A	10	39.06
2	7	A	19	57.64
3	7	A	12	42.22
4	7	A	24	64.07
5	7	A	16	51.80
6	7	A	17	54.30
7	7	A	14	46.71
8	7	A	4	30.01
9	7	A	14	46.71
10	7	A	21	60.85
11	7	A	25	65.94
12	7	A	14	46.71
13	7	A	11	40.33
14	7	A	5	34.06
15	7	A	14	46.71
16	7	A	14	46.71
17	7	A	18	55.97
18	7	A	12	42.22
19	8	A	12	50.75
20	8	A	2	33.94
21	8	A	16	53.40
22	8	A	3	34.35
23	8	A	17	58.21
24	8	A	6	41.61
25	8	A	20	66.21
26	8	A	15	54.57
27	8	A	6	41.61
28	8	A	18	60.86
29	8	A	11	49.26
30	8	A	8	56.39
31	8	A	16	56.39
32	8	A	13	52.22
33	8	A	5	39.51
34	8	A	11	49.26
35	8	A	7	43.71
36	9	A	10	44.77
37	9	A	5	34.06
38	9	A	17	65.94
39	9	A	9	42.36
40	9	A	8	40.07
41	9	A	15	55.89



RAW SCORES AND CORRESPONDING T SCORES ON THE  
TEST ANXIETY SCALE FOR CHILDREN (continued)

Subject	Grade	Group	Raw Score	T Score
42	9	A	14	52.95
43	9	A	15	55.89
44	9	A	12	48.59
45	7	B	22	59.93
46	7	B	14	44.03
47	7	B	26	67.54
48	7	B	21	57.64
49	7	B	11	39.15
50	7	B	13	42.36
51	7	B	13	42.36
52	7	B	19	52.10
53	7	B	19	52.10
54	7	B	4	27.01
55	7	B	14	44.03
56	7	B	18	50.00
57	7	B	7	36.17
58	7	B	17	47.90
59	7	B	22	59.93
60	7	B	18	50.00
61	7	B	20	54.87
62	7	B	18	50.00
63	8	B	23	63.52
64	8	B	11	43.71
65	8	B	8	36.93
66	8	B	24	66.21
67	8	B	17	51.48
68	8	B	18	54.34
69	8	B	8	36.93
70	8	B	9	39.51
71	8	B	15	47.01
72	8	B	16	49.24
73	8	B	19	57.21
74	8	B	13	45.43
75	8	B	4	29.39
76	8	B	20	58.85
77	8	B	17	51.48
78	8	B	16	49.24
79	8	B	17	51.48
80	9	B	10	34.00
81	9	B	19	57.64
82	9	B	12	40.95
83	9	B	19	57.64





RAW SCORES AND CORRESPONDING T SCORES ON THE  
TEST ANXIETY SCALE FOR CHILDREN (continued)

Subject	Grade	Group	Raw Score	T Score
84	9	B	17	52.82
85	9	B	25	65.94
86	9	B	14	46.36
87	9	B	10	34.00
88	9	B	14	46.36



## APPENDIX F



RAW SCORES AND CORRESPONDING T SCORES ON THE  
TAT n ACHIEVEMENT TEST

Subject	Grade	Group	Raw Score	T Score
1	7	A	1	45.70
2	7	A	1	45.70
3	7	A	8	75.08
4	7	A	1	45.70
5	7	A	5	58.61
6	7	A	1	45.70
7	7	A	7	65.94
8	7	A	1	45.70
9	7	A	5	58.62
10	7	A	2	50.39
11	7	A	5	58.62
12	7	A	1	45.70
13	7	A	4	56.85
14	7	A	1	45.70
15	7	A	1	45.70
16	7	A	1	45.70
17	7	A	1	45.70
18	7	A	1	45.70
19	8	A	1	46.23
20	8	A	1	46.23
21	8	A	1	46.23
22	8	A	4	58.85
23	8	A	4	58.85
24	8	A	9	68.90
25	8	A	7	63.52
26	8	A	5	60.49
27	8	A	1	46.23
28	8	A	1	46.23
29	8	A	1	46.23
30	8	A	1	46.23
31	8	A	2	51.72
32	8	A	1	46.23
33	8	A	1	46.23
34	8	A	2	51.72
35	8	A	1	46.23
36	9	A	9	62.06
37	9	A	4	45.12
38	9	A	1	34.95
39	9	A	9	62.06
40	9	A	6	51.90
41	9	A	7	50.29



RAW SCORES AND CORRESPONDING T SCORES ON THE  
TAT n ACHIEVEMENT TEST (continued)

Subject	Grade	Group	Raw Score	T Score
42	9	A	1	34.95
43	9	A	8	60.47
44	9	A	4	45.12
45	7	B	1	47.18
46	7	B	1	47.18
47	7	B	1	47.18
48	7	B	5	59.67
49	7	B	2	52.41
50	7	B	5	59.67
51	7	B	1	47.18
52	7	B	1	47.18
53	7	B	1	47.18
54	7	B	1	47.18
55	7	B	2	52.41
56	7	B	1	47.18
57	7	B	1	47.18
58	7	B	10	64.07
59	7	B	1	47.18
60	7	B	1	47.18
61	7	B	9	64.07
62	7	B	0	47.18
63	8	B	7	59.29
64	8	B	1	40.71
65	8	B	7	59.29
66	8	B	1	40.71
67	8	B	5	52.99
68	8	B	4	50.76
69	8	B	1	40.71
70	8	B	7	59.29
71	8	B	10	74.82
72	8	B	1	40.71
73	8	B	1	40.71
74	8	B	5	52.99
75	8	B	4	50.76
76	8	B	7	59.29
77	8	B	5	52.99
78	8	B	4	50.76
79	8	B	1	40.71
80	9	B	7	68.81
81	9	B	4	52.42
82	9	B	4	52.42
83	9	B	1	39.88





RAW SCORES AND CORRESPONDING T SCORES ON THE  
TAT n ACHIEVEMENT TEST (continued)

Subject	Grade	Group	Raw Score	T Score
84	9	B	1	39.88
85	9	B	1	39.88
86	9	B	1	39.88
87	9	B	5	56.52
88	9	B	7	64.71



## APPENDIX G



RAW SCORES ON SUBTESTS OF THE  
STANFORD ACHIEVEMENT BATTERY (Partial)

Form W

Subject	Grade	Group	Language	Spelling	Paragraph	Meaning	Computation	Arithmetic		
								Concepts	Applications	
1	7	A	59	13	15		11	11	13	
2	7	A	67	14	14		9	7	10	
3	7	A	58	18	22		4	10	7	
4	7	A	60	14	13		15	11	8	
5	7	A	63	35	23		8	12	7	
6	7	A	69	19	13		8	14	4	
7	7	A	75	17	23		9	9	9	
8	7	A	37	14	29		11	14	6	
9	7	A	74	32	20		7	10	5	
10	7	A	80	14	22		9	11	11	
11	7	A	64	24	20		13	7	3	
12	7	A	52	30	39		5	7	10	
13	7	A	71	24	20		11	12	8	
14	7	A	75	14	31		9	15	14	
15	7	A	50	22	24		9	16	12	
16	7	A	77	20	33		6	13	8	
17	7	A	76	27	25		6	12	10	
18	7	A	41	27	18		11	9	5	
19	8	A	69	23	15		7	12	6	
20	8	A	87	29	29		17	17	16	
21	8	A	85	19	26		6	11	9	
22	8	A	82	19	21		5	9	6	
23	8	A	82	18	29		7	15	13	
24	8	A	105	38	32		10	14	10	
25	8	A	91	18	40		13	11	12	



RAW SCORES ON SUBTESTS OF THE  
STANFORD ACHIEVEMENT BATTERY (Partial) (continued)

Form W

Subject	Grade	Group	Language	Spelling	Paragraph	Meaning	Computation	Arithmetic		
								Concepts	Applications	
26	8	A	71	14	27	18	13	13	13	13
27	8	A	82	44	26	20	6	6	6	6
28	8	A	53	15	21	11	9	9	9	9
29	8	A	69	25	23	12	7	7	7	7
30	8	A	94	20	30	12	14	14	14	14
31	8	A	73	25	32	11	11	11	10	10
32	8	A	77	24	21	9	13	13	11	11
33	8	A	74	14	18	13	16	16	9	9
34	8	A	84	11	26	30	15	15	12	12
35	8	A	96	16	34	4	17	17	11	11
36	9	A	99	20	30	12	11	11	10	10
37	9	A	81	42	24	11	13	13	10	10
38	9	A	92	25	33	17	21	21	16	16
39	9	A	78	26	40	14	17	17	11	11
40	9	A	81	27	25	18	14	14	8	8
41	9	A	78	25	31	9	11	11	15	15
42	9	A	86	29	36	15	13	13	10	10
43	9	A	85	27	29	15	16	16	9	9
44	9	A	99	22	22	13	9	9	11	11
45	7	B	68	15	22	15	16	16	11	11
46	7	B	66	16	18	11	8	8	8	8
47	7	B	86	22	25	11	14	14	14	14
48	7	B	80	25	26	11	12	12	7	7
49	7	B	91	27	30	16	19	19	10	10
50	7	B	80	26	28	12	17	17	8	8





RAW SCORES ON SUBTESTS OF THE  
STANFORD ACHIEVEMENT BATTERY (Partial) (continued)

Form W

Subject	Grade	Group	Language	Spelling	Paragraph	Meaning	Computation	Arithmetic		
								Concepts	Applications	
51	7	B	81	43	31		7	9		7
52	7	B	73	15	20		10	20		14
53	7	B	90	15	26		10	17		11
54	7	B	73	20	17		10	12		16
55	7	B	86	20	26		15	19		21
56	7	B	59	6	12		13	14		9
57	7	B	80	14	10		15	12		10
58	7	B	102	30	27		12	20		15
59	7	B	87	34	27		16	20		10
60	7	B	85	24	18		10	7		10
61	7	B	82	23	28		11	16		16
62	7	B	97	30	29		22	22		14
63	8	B	87	19	30		13	21		11
64	8	B	70	19	32		11	16		16
65	8	B	98	38	31		22	13		8
66	8	B	102	27	35		20	24		15
67	8	B	65	21	19		11	16		14
68	8	B	91	13	21		17	24		15
69	8	B	64	19	22		7	9		9
70	8	B	98	37	25		12	12		14
71	8	B	105	16	29		17	20		14
72	8	B	68	27	13		17	14		14
73	8	B	80	14	30		22	21		15
74	8	B	93	13	12		17	20		10
75	8	B	98	38	33		14	16		8



RAW SCORES ON SUBTESTS OF THE  
STANFORD ACHIEVEMENT BATTERY (Partial) (continued)

Form W

Subject	Grade	Group	Language	Spelling	Paragraph	Meaning	Computation	Arithmetic		
								Concepts	Applications	
76	8	B	82	34	20		15	22		9
77	8	B	87	21	29		18	15		17
78	8	B	99	37	41		25	16		13
79	8	B	64	18	17		14	13		10
80	9	B	81	31	27		13	25		9
81	9	B	85	34	28		17	31		25
82	9	B	83	16	13		23	22		16
83	9	B	90	23	28		14	19		20
84	9	B	103	29	27		25	21		16
85	9	B	71	15	17		10	9		8
86	9	B	70	25	30		15	17		9
87	9	B	94	30	33		15	25		20
88	9	B	107	42	32		22	15		16



## APPENDIX H



RAW SCORES ON THE ELLEY S.E. INDEX

Group A

Subject	Score	Subject	Score	Subject	Score	Subject	Score
1	4	12	9	23	5	34	7
2	14	13	10	24	10	35	9
3	14	14	7	25	11	36	8
4	14	15	11	26	12	37	6
5	17	16	13	27	14	38	14
6	7	17	15	28	12	39	5
7	8	18	16	29	8	40	12
8	17	19	15	30	13	41	5
9	9	20	12	31	6	42	7
10	10	21	10	32	7	43	8
11	13	22	13	33	14	44	11

Mean 10.5  
S.D. 3.4739

Group B

Subject	Score	Subject	Score	Subject	Score	Subject	Score
1	13	12	12	23	12	34	8
2	15	13	2	24	9	35	5
3	10	14	6	25	9	36	12
4	16	15	10	26	15	37	6
5	10	16	6	27	8	38	17
6	17	17	19	28	14	39	14
7	10	18	5	29	14	40	8
8	12	19	11	30	12	41	13
9	11	20	9	31	16	42	15
10	11	21	6	32	8	43	12
11	14	22	4	33	9	44	9

Mean 10.77  
S.D. 3.7287











**B29906**